

REMARKS

Reconsideration of the subject application is respectfully requested.

Claims 1, 3, 4, 6, 7, 9, and 10 remain pending in the subject application. Claims 2, 5, and 8 have been previously canceled to facilitate prosecution of the instant application.

Applicant notes that, in view of MPEP 707.07 that requires the action to be complete as to all matters, Applicant proceeds under the understanding that the present claims are patentable once the references cited herein are overcome.

Item 3 of the current Office Action has objected to the specification because of language reciting "primary system." The Office Action has determined the previous claim amendment to constitute new matter. Applicant respectfully traverses this determination. Applicant refers to the specification as filed which states:

The invention lies in the boiling water reactor technology field. More-specifically, the invention relates to a method for protecting the components of the primary system of a boiling water reactor in particular from stress corrosion. In a boiling water reactor, the coolant which comes into contact with the reactor core is known as primary coolant, and the lines and components which are exposed to the primary coolant are known as the primary system. (page 1, lines 15-21 of the specification as filed).

Thus, Applicant asserts the primary system is defined with specificity. Applicant respectfully requests reconsideration and withdrawal of this objection.

In items 5 and 6 of the current Office Action, the Examiner has objected to the specification under 35 USC 112 because of an alleged lack of enabling disclosure. Applicant respectfully traverses this objection.

One can obtain the concise teaching from the subject application, that stress corrosion cracking can be prevented by metering alcohol to the coolant so that a specific alcohol concentration is metered and maintained in the downcomer. As can also clearly be seen from the disclosure of the subject application, the radioactive radiation present in the reactor core during the operation of the reactor causes oxidizing radiolysis products such as oxygen to be generated from the cooling water. These products react with the added alcohol and are thereby "used up", so that they are no longer available for oxidation or corrosion of the components of the primary system.

The radiation level, meaning the radiation level predominant in the reactor core, is a given fact, which cannot be impacted by a corrosion-reducing measure of alcoholizing. In addition, the radiation level does not at all determine the temperature of the cooling water in the reactor. The cooling water is not affected by the radiation, but by the heat released by decomposition during uranium fission. The temperature is also not a parameter, which is modifiable by anti-corrosion measures as defined by the present invention. In boiling water reactors, it is usually 288°C. The knowledge of the exact radiation conditions in a reactor core is therefore not necessary in order to execute the invention.

The tests described in the application were performed at 280°C and show that the corrosion potential of oxidized samples can be maintained below a value of 230 mV despite the presence of oxygen. In order to show this, it is insignificant whether the oxygen was generated from the water by radiation or was metered in addition.

Contrary to the assertion in the Office Action, based on the above clarification, Applicant asserts the invention is disclosed such that one of ordinary skill in the art can easily perform it. The radiation level is not important for the corrosion protection. It is solely important to bind the substances that are generated by radiolysis by appropriate alcohol concentration.

Applicant respectfully requests reconsideration and withdrawal of this objection.

Items 9 and 10 have rejected claims 1, 3, 4, 6, 7, 9, and 10 under 35 USC 112 first and second paragraphs.

Applicant has addressed, in the comments immediately above, the position that the radiation level is not important and is not claimed in the subject application.

Applicant respectfully requests reconsideration and withdrawal of this rejection.

Claims 1, 3, 4, 6, 7 and 9 are rejected under 35 U.S.C. §103(a) over Afanasiev (SU 653953, herein after SU '953) in view of U.S. Patent Application Publication No. 2002/010953 to Hettiarachchi (referred to herein as the '953 publication).

Applicant respectfully traverses this rejection based on the representations set forth below.

Applicant asserts that claim 1 is neither taught nor suggested by the combined disclosures in the SU '953 and the '953 publication.

SU indicates a value of 10 $\mu\text{mol/liter}$ as the lower limit of the alcohol contents. At least this concentration level is required in order to achieve the goal aimed at in the reference.

Applicant again reminds the Office that the reference must be considered as a whole.

Additionally, in order to use a reference as prior art, the MPEP 2141.02 and applicable case law provide "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983)

For reasons of simplification, applicants' conversions of the concentration values of $\mu\text{mol/l}$ into $\mu\text{mol/kg}$ indicated in SU '953 leave the fact aside that the respective values must be present during the operation of the reactor, wherein, in the case of a boiling water reactor, the temperature is 288°C. At 275°C, one liter of water only has a density of 0.76 kg/l, and at 300°C, a density of 0.71 kg/l (see enclosure).

Therefore:

- at a temperature of 275°C, a concentration of 10 µmol/l corresponds to a concentration of $10/0.76 = 13.15$ µmol, and

- at a temperature of 300°C, it corresponds to a concentration of $10/0.71 = 14.08$ µmol/kg.

Thus, the invention operates clearly below the range indicated in the SU '953 reference.

It is indicated in the SU '953 reference, that alcohol having a concentration in the range of 10^{-5} to 10^{-1} mol/l suppresses the formation of oxygen during radiolysis, which means in the reactor core. A substantial part of the alcohol is oxidized in the reactor core by the radiolysis oxygen that is being generated. Unavoidably, a certain portion of the alcohol is radiolytically destroyed by the effect of the radiation that is present. When metering the alcohol in the downcomer, as required in the claimed subject application, the loss of alcohol in the core would have to be taken into consideration, which means, the alcohol contents oxidized in the core and decomposed by radiation would have to be taken into consideration by a correspondingly higher dose. In the end, this means that the maximal alcohol concentration of the invention is even further off from the lower limit indicated in the SU '953 reference.

One of ordinary skill in the art could not expect that an effect of metering alcohol is to be expected at all below 10 $\mu\text{mol/l}$ (= 14.08 or 13.15 $\mu\text{mol/kg}$), particularly in knowledge of the range disclosed in RU extending over 4 decimal powers.

Thus, the disclosure in the SU '953 reference is deficient in its teaching. Combination of the SU '953 disclosure with the disclosure of the '953 publication does not cure the deficiencies. The combined teaching of the SU '953 disclosure with the disclosure of the '953 publication still fails to teach or suggest the subject invention as claimed.

The '953 publication describes a completely different solution than the method claimed in the subject application. The conventionally used means for reducing oxidizing substances is still hydrogen in the '953 publication. But, the surfaces of the components are doped with a precious metal. In doing so, iron ions contained in an oxide film are replaced by a precious metal. However, this replacement does not take place because the iron ions bound in the oxide layer cause corrosion but in order to catalyze (see the '953 publication, paragraph [0013]). The reaction is between oxidizing substances and hydrogen added during the operation of the reactor. This is not the alcohol metering of the subject application. A person having ordinary skill in the art cannot acquire knowledge from the combined teaching of SU '953 and the '953 publication to meter alcohol in combination with a component surface doped with a precious metal during the operation of the reactor.

Applicant asserts that when examining the cited references, as a whole, the subject invention cannot be deemed obvious over the cited references.

Applicant reminds the Office that the chemical arts are viewed as being highly unpredictable.

The U.S. Court of Appeals for the Federal Circuit has recently stated:

To the extent an art is unpredictable, as the chemical arts often are, KSR's focus on these "identified, predictable solutions" may present a difficult hurdle because potential solutions are less likely to be genuinely predictable." *Eisai Co. Ltd. v. Dr. Reddy's Labs., Ltd.*, 533 F.3d 1353, 1359 (Fed. Cir 2008).

Thus, Applicant asserts that when viewing the combined disclosure of SU '953 and the '953 publication, the elevated standard articulated by the Federal Circuit to support an obviousness rejection has not been achieved.

In the subject application, Applicant asserts there is analogous uncertainty because there is great difficulty in predicting precisely how a system with a greatly reduced amount of alcohol will behave. Applicant asserts, based on the remarks herein, and in view of the standard articulated by the Federal Circuit, the SU'953 reference and the '953 publication cannot be used to support an obviousness rejection.

Additionally, claim 10 has been rejected in item 13 over the aforementioned SU '953 reference and the '953 publication in view of U.S. Patent 4,559,109

(hereinafter, the '109 patent). Applicant respectfully asserts claim 10 is dependent on independent claim 1 and encompasses all the limitations of claim 1. Claim 1 has been shown (above) to be non-obvious over the cited SU '953 reference and the '953 publication. Combination of disclosures of the cited references with that of the disclosure in the '109 patent still are deficient to teach the method of claim 1 because claim 1 requires "metering in additional alcohol based on the measuring in order to maintain an alcohol concentration of from 0.1 to less than 10 $\mu\text{mol/kg}$ in the downcomer." There is no teaching or suggestion found anywhere in the combined disclosure of the SU '953 reference and the '953 publication with the '109 patent to teach or suggest the subject invention as now claimed.

In view of the failure of the combined disclosure of SU '953 and the '953 publication to teach or suggest the claimed invention in the subject application, and the failure of the '109 patent to cure the deficiency in the combined disclosures, Applicant asserts a rejection under 35 USC 103(a) cannot be properly applied. Applicant respectfully requests reconsideration withdrawal of this rejection.

The Office Action, on page 11 has requested a terminal disclaimer over co-pending U.S. Patent Application 10/820,966 in view of U.S. Patent Application Publication No. 2001/0004962.

A terminal disclaimer is submitted herewith.

Applicant believes the subject application, as now presented, is in condition for allowance. In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out.

Petition for extension is herewith made. The extension fee for response within a period of three (3) months pursuant to Section 1.136(a) in the amount of \$1,110.00 in accordance with Section 1.17 is enclosed herewith. Please charge any other fees which might be due with respect to Sections 1.16 and 1.17 to Deposit Account No. 12-1099 of Lerner Greenberg Sterner LLP.

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Respectfully submitted,

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